UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,671	09/19/2005	Harry Richard Claringburn	P/62322	1916

156 7590 07/31/2009
Kirschstein, Israel, Schiffmiller & Pieroni, P.C.
425 FIFTH AVENUE
5TH FLOOR
NEW YORK, NY 10016-2223

EXAMINER	
PASCAL, LESLIE C	

ART UNIT	PAPER NUMBER
2613	

NOTIFICATION DATE	DELIVERY MODE
07/31/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

AI@KIRSCHSTEINLAW.COM
ptoofficeactions@yahoo.com

Office Action Summary	Application No.	Applicant(s)	
	10/517,671	CLARINGBURN, HARRY RICHARD	
	Examiner	Art Unit	
	Leslie Pascal	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-28,31-39 and 42-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-28 31-39 42-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 24, 32, 35, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al (2003/0138255) in view of Barnard (6115157).

Cook et al teach a method of controlling launch power of at least one optical signal in an add drop node (paragraphs 6 and 69 adding and removing channels) by predistorting (through element 60), passing the predistorted signal through an amplifier (20) and using the output of the amplifier to provide the predistorted signal (through elements 30 and 40 to element 60). Although he does not specifically teach that the FPGA (40) compares a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate to the signal output by the amplifier (20), he teaches that he uses the output of the amplifier (170) to provide a signal to control the launch power that is predistorted.

Barnard et al teach a method of controlling signal launch power of at least one optical signal in an optical communication network, comprising the step of: pre-distorting the launch power (e.g., "transmitter powers are adjusted" in the abstract) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "in accordance with the channel rate" in the abstract).,by passing the at least one pre-distorted optical signal through an optical amplifier_(e.g., 10, 20, 30 in Figs. 3, 6, and 7), and by comparing a signal derived from an output of the optical amplifier_(e.g., BER(2) in Fig. 3) with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal_(e.g., BER(2) in col. 7, lines 27-29).

Barnard does not expressly disclose:
performing the comparing step by using a comparator. However, Barnard does disclose

the function of comparing "a signal derived from an output of the optical amplifier (e.g., BER(2) in Fig. 3) with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal (e.g., BER(2) in col. 7, l. 27-29)". Obviously, any suitable device that performs this function of comparing would constitute a comparator.

It would have been obvious to compare a signal derived from an output of the optical amplifier (e.g., BER(2) in Fig. 3) with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal (e.g., BER(2) in col. 7, lines 27-29) as taught by Barnard et al in the system of Cook et al since Cook teaches using a programmable device to control the predistortion of a signal based on using a signal output from an amplifier in a system similar to Barnard's system.

Regarding claim 32, Barnard <u>discloses</u>:
The method as claimed in claim 24, wherein the optical communication network carries an n channel multiplex (multiplexer 13 in Figs. 3, 6, and 7).

Regarding claim 35, Barnard discloses:
An apparatus for controlling signal launch power of at least one optical signal in an optical communication network, comprising:
a) a launcher for launching the at least one optical signal onto the network (e.g., transmitters in Figs. 3, 6, and 7);
b) means for pre-distorting the launch power (e.g., "transmitter powers are adjusted" in the abstract) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "in accordance with the channel rate" in the abstract)
c) an optical amplifier through which at least one pre-distorted optical signal is passed in use (e.g., 10, 20, 30 in Figs. 3, 6, and 7).; and
d) the pre-distorting means would obviously include a comparator for comparing a signal derived from an output of the optical amplifier (Barnard, e.g., BER(2) in Fig. 3) with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal (Barnard, e.g., BER(2) in col. 7, l. 27-29).

Regarding claim 43, claim 43 introduces limitations that correspond to the limitations introduced by claim 32. Therefore, the recited limitations in claim 32 read on the corresponding limitations in claims 43.

3. Claims 25-27, 31-34, 36-38, and 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al (2003/0138255) in view of (Khaleghi et al. (U.S. Patent No. 6,040,933, hereinafter "Khaleghi").

Cook et al teach a method of controlling launch power of at least one optical signal in an add drop node (paragraphs 6 and 69 adding and removing channels) by predistoring (through element 60), passing the predistorted signal through an amplifier (20) and using the output of the amplifier to provide the predistorted signal (through elements 30 and 40 to element 60). Although he does not specifically teach that the FPGA (40) compares a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate to the signal output by the amplifier (20), he teaches that he uses the output of the amplifier (170) to provide a signal to control the launch power that is predistorted.

Regarding claims 24- 25, Khaleghi discloses:
A method of controlling signal launch power of at least one optical signal in an optical communication network, comprising the step of:
pre-distorting the launch power (e.g., "amount of optical power adjustment of the channel transmitters" in the abstract; e.g., "amount (Z) of transmitter optical power adjustment" in col. 6, l. 33-39) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "signals having different bit rates" in the abstract; e.g., "amount (Z)" is determined in accordance with "bit rate"/bandwidth, shown in col. 6, l. 16-33)., by passing the at least one pre-distorted optical signal through an optical amplifier (e.g., any of OA1-OA4 in Khaleghi does not expressly disclose: performing the pre-distorting step by comparing a signal derived from an output of the optical amplifier with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal,
wherein the pre-distorting step is performed by pre-distorting the launch power of the at least one optical signal in accordance with a known value of expected noise on a signal path of the at least one optical signal.
However, Khaleghi does teach the processing of the same conceptual elements for the same claimed purpose of "controlling signal launch power of at least one optical signal in an optical communication network" ("adjusting the optical power of the channel transmitters" in the abstract):
(1) an output of the optical amplifier,
(2) the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal, and
(3) a known value of expected noise on a signal path of the at least one optical signal.
Note the more detailed explanation below:

Regarding (1), notice the processing of EQ. 2 in col. 5, l. 1-9, which is the optical power of the signal transmitted over the ith channel measured at the input of the ith amplifier, which would be suitably exemplified by the input of OA4, which would be from the "output of the optical amplifier' of OA3, as claimed.
Regarding (2), notice the processing of the bit rate of sl in EQ. 3 in col. 6, l. 22-25, which constitutes "the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal", as claimed.
Regarding (3), notice the processing of i in EQ. 2 in col. 5, l. 1-9, which is the noise figure of the ith amplifier at channel i, which would be suitably exemplified by the noise figure of OA4, which constitutes "a known value of expected noise on a signal path of the at least one optical signal", as claimed.
More exactly, Khaleghi specifically teaches the processing of these elements according to the formulas previously discussed in the Final Office action of 1-21-09. See action pages 6-7 for details.

Regarding the claim limitation of "a signal derived from an output of the optical amplifier', the term on the right suitably corresponds due to its incorporation of P~i-.
Regarding the claim limitation of "a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal", the term on the left suitably corresponds due to its incorporation of the bit rate of sl.
Regarding the claim limitation of "comparing" "a signal derived from an output of the optical amplifier' with "a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal", notice that the difference form of Z implies the comparing step.
Regarding the claim limitation of "pre-distorting...in accordance with a known value of expected noise on a signal path of the at least one optical signal", the term on the right suitably corresponds due to its incorporation of F~_.

It would have been obvious to compare a signal derived from an output of the optical amplifier with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal (EQ. 3 in col. 6, l. 22-25,) as taught by Khaleghi et all since Cook teaches using a programmable device to control the predistortion of a signal based on using a signal output from an amplifier in a system similar to Khaleghi's system.

Regarding claim 26, Khaleghi <u>does</u> not expressly disclose:
The method as claimed in claim 24, wherein the known values are provided by management systems of the optical communication network.
However, there must be some source for providing these "known values" of the prior art of record. Management systems are well known in the art for providing data for use in decision making. These "known values" constitutes data for use in decision making. Accordingly, management systems would provide an obvious source for providing these "known values".

Regarding claim 27, Khaleghi does not expressly disclose:
The method as claimed in claim 24, wherein the known values are provided by a network and connectivity information unit.
However, there must be some source for providing these "known values" of the prior art of record. Notice that these "known values" constitute network and connectivity information. For example, "a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal" of the prior art of record ("bit rate"/bandwidth in col. 6, l. 16-33) constitutes information about the "bit rate"/bandwidth of an optical signal in the network, i.e., network information. For another example, "a known value of expected noise on a signal path of the at least one optical signal" of the prior art of record ("noise figure" in col. 4, l. 36 - col. 5, l. 11) constitutes information about the "signal path"/connectivity in the network, i.e., connectivity information. Accordingly, any suitable source for these "known values" would constitute "a network and connectivity information unit". Management systems are well known in the art for providing data for use in decision making. These "known values" constitutes data for use in decision making. Accordingly, management systems would provide an obvious source for providing these "known values", thus constituting "a network and connectivity information unit".
Regarding claim 31, Khaleghi discloses:
The method as claimed in claim 25, wherein the known value for expected noise on the signal path of the at least one optical signal is derived from a knowledge of a number and a type of the optical
amplifier through which the at least one optical signal will pass (col. 2, l. 40-50).
Regarding claim 32, Khaleghi discloses: wherein the optical communication network carries an n channel multiplex (multiplexer 22 in the figures), and wherein the pre-distorting step is performed by an optical amplifier (incorporation of influence of optical amplifiers in col. 5, l. 1-8).
Regarding claim 33, Khaleghi discloses: wherein the launch power of the at least one optical signal with an associated modulation signal of a higher bandwidth is pre-distorted to increase a signal level of the at least one optical signal compared to an optical signal with an associated modulation signal of a lower bandwidth (col. 6, l. 6-16). Regarding claim 34, Khaleghi does not expressly disclose:
The method as claimed in claim 25, wherein the launch power of the at least one optical signal is pre-distorted to increase a signal level of the at least one optical signal when the expected noise on the signal path of the at least one optical signal through the network is higher compared to an optical signal having a lower than expected noise on its signal path through the network.
However, notice that the prior art of record does incorporate expected noise (incorporation of influence of noise F in col. 5, l. 1-8) in an equation to determine how to control the signal level of an optical signal (amount of adjustment Xi in col. 5, l. 1-8). This equation is broad enough in scope to
encompass a variety of situations, including the situation where "the expected noise on the signal path of the at least one optical signal through the network (channel i in col. 5, l. 1-8) is higher compared to an optical signal having a lower than expected noise on its

signal path through the network (channel refin col. 5, l. 1-8)". In such a situation, one possible result would be "to increase a signal level of the at least one optical signal". Moreover, the prior art of record also more generally suggests the use of an increased signal level for an optical signal with higher noise (col. 6, l. 10-16).
Regarding claims 36-38 and 42-45, claims 36, 37, 38, 42, 43, 44, and 45 introduce limitations that correspond to the limitations introduced by claims 25, 26, 27, 31, 32, 33, and 34, respectively. Therefore, the recited limitations in claims 25-27 and 31-34 read on the corresponding limitations in claims 36-38 and 42-45.

4. Claims 28 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al (2003/0138255) in view of Khaleghi as applied to the claims above, and further in view of Ramaswami et al. (Optical Networks: A Practical Perspective, hereinafter "Ramaswami").

Regarding claim 28, Khaleghi <u>does</u> not expressly disclose:
The method as claimed in claim 25, wherein the known values are supplied by a supervisory channel.
However, there must be some medium for supplying these "known values" of the prior art of record from the source of these "known values" of the prior art of record. The technique of a supervisory channel is well known in the art, as exemplified by Ramaswami (p. 425, middle paragraph, "supervisory channel"), for providing communications for management functions. Since these "known values" are used for management functions (e.g., management of functions of Khaleghi), the supplying of these "known values" would constitute providing communications for management functions. Accordingly, a supervisory channel would provide an obvious medium for providing communications for management functions, e.g., supplying these "known values" from the source of these "known values".
Regarding claim 39, claim 39 introduces limitations that correspond to the limitations introduced by claim 28. These limitations introduced by claim 28 are addressed by Ramaswami. Similarly, Ramaswami is applied here to address the corresponding limitations in claim 39.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Pascal whose telephone number is 571-272-3032. The examiner can normally be reached on Monday- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leslie Pascal/
Primary Examiner
Art Unit 2613